

426-16

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1853

RECORDED



Work condensed and  
mixed with yeast, or not.  
"Zeolithoid or  
grainstone"

A.D. 1853 . . . . . N° 1196.

## Preparing Materials for making Beer and other Beverages.

**LETTERS PATENT** to Herman Dirs Mertens, of Margate, in the County of Kent, Solicitor, for the Invention of "**IMPROVEMENTS IN PREPARING MATERIALS TO BE EMPLOYED IN MAKING BEER AND OTHER BEVERAGES.**"—A communication.

Sealed the 5th July 1853, and dated the 14th May 1853.

**PROVISIONAL SPECIFICATION** left by the said Herman Dirs Mertens at the Office of the Commissioners of Patents, with his Petition, on the 14th May 1853.

I, HERMAN DIRS MERTENS, of Margate, in the County of Kent,  
5 Solicitor, do hereby declare the nature of the said Invention for "**IMPROVEMENTS IN PREPARING MATERIALS TO BE EMPLOYED IN MAKING BEER AND OTHER BEVERAGES**" to be as follows:—

This Invention consists of treating the liquor commonly called  
"worts," which is the extract prepared from grain by brewers and  
 10 distillers, by the well known process called mashing, in the manner  
 following, care being taken in preparing the worts to arrest the fermentation before it has assumed a vinous character.



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The worts or saccharine liquor should be separated from the grain by decantation or pressure, or otherwise, and the liquor afterwards evaporated in any steam or other apparatus heated by fire until it becomes thick or viscid and will solidify on cooling. The viscid mass may be formed into cakes or blocks of any convenient size, and shaped by 5 pouring it into moulds or barrels previous to cooling. The substance thus prepared becomes but little viscid by the action of the atmosphere, and can be easily kept for any length of time in any climate.

The aroma and bitter principle of hops may be added to the liquor by infusion or mixture in the worts. The evaporation of the worts 10 may be accelerated by agitation, and care will be necessary to avoid burning, unless a vacuum pan heated by steam be used.

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**SPECIFICATION** in pursuance of the conditions of the Letters Patent, filed by the said Herman Dirs Mertens in the Great Seal Patent Office, on the 14th November 1853. 15

**TO ALL TO WHOM THESE PRESENTS SHALL COME, I, HERMAN DIRS MERTENS**, of Margate, in the County of Kent, Solicitor, send greeting.

**WHEREAS** Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Fourteenth day of May, in the year of 20 our Lord One thousand eight hundred and fifty-three, in the sixteenth year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said Herman Dirs Mertens, Her special licence that I, the said Herman Dirs Mertens, my executors, administrators, and assigns, or such others as I, the said Herman Dirs Mertens, my 25 executors, administrators, and assigns, should at any time agree with, and no others, from time to time and at all times thereafter during the term therein expressed, should and lawfully might make, use, exercise, and vend, within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for "**IMPROVEMENTS IN 30 PREPARING MATERIALS TO BE EMPLOYED IN MAKING BEER AND OTHER BEVERAGES,**" communicated to me from abroad, upon the condition (amongst others) that I, the said Herman Dirs Mertens, by an instrument in writing under my hand and seal, should particularly describe and



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ascertain the nature of the said Invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the said Letters Patent.

- 5 **NOW KNOW YE**, that I, the said Herman Dirs Mertens, do hereby declare the nature of the said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement thereof (that is to say):

Zeilithoid or grainstone is the solid vegetable substance which  
10 remains after evaporating a decoction or infusion in hot water of bruised or ground grain, either wholly malted or partly malted and partly unmalted, or of any other vegetable matter or refuse of vegetable matter containing starch or saccharine matter which has undergone saccharine transformation (zuckerbildung).

- 15 This substance thus produced is perfectly hard, and presents a resinous structure and appearance.

It is prepared by taking the above-mentioned infusion, or, in other words, any kind of worts in a good condition, as made or produced by brewers, distillers, and others, and evaporating the water from it by  
20 any convenient process applicable to the purpose (though the use of a vacuum pan heated by steam is recommended), till the residuum is reduced to a thick syrup. This thick syrup is then poured into heated pans for accelerating and completing the evaporation, which should be further assisted by agitation by mechanical means in the usual manner;  
25 and as the continued evaporation renders the liquid still thicker or more viscid, it is kneaded by hand or by machinery, constantly drawing out portions of it into the air, till the slighter or tape-like portions or stripes of it become brittle, & will break like glass. This operation is continued till the mass is so far solidified that it does not adhere to  
30 the skin on touching it. When the process is completed, and the substance is moulded or packed in any required form in strong casks or other receptacles most convenient for stowage or transmission, so as to protect it in the best possible manner from humidity or the action of the atmosphere, and thus preserved, it will keep good and uninjured  
35 for a great many years in any climate.

Zeilithoid or grainstone thus prepared may be used in the production



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of syrups by simply dissolving it in water, according to taste, and for various other purposes ; but I propose to employ it mainly as the basis of all descriptions of beer and other fermented beverages, in which cases it is desirable to boil the worts for a short time, say from two to three hours, before commencing the evaporating process. 5

To produce beer from the grainstone it has only to be dissolved in hot or cold water to reproduce a wort similar to that from which it was reduced by evaporation, the quantity of water to be added being from four to ten times the weight of the grainstone, according as strong or light beer is required ; and if the self-fermenting zeilithoid be 10 not used, then yeast must be added to produce fermentation, which must be managed as in ordinary brewing, and the result will be the production of beer which, if made from zeilithoid or grainstone produced from malt & flavor<sup>d</sup> with hops, will not differ from beer 15 made in the usual manner, according as the malt and hops used were in quality and proportion adapted to the production of one or other of such beverages.

Since, therefore, the flavor & character of the beer will depend upon the quality and flavor of the grainstone, which in turn depends for these properties upon the materials of which it is made, it follows 20 that the flavor & quality of the beer can be varied to suit different tastes by varying the materials of which the worts are made, precisely as in the manufacture of beer in the ordinary way. The aroma and bitter principle of hops, or any other aromatic or bitter principle suited to the purpose, is added, either by incorporation with the grainstone 25 during its manufacture, or added in the shape of an infusion on its being re-converted into worts, as above described.

When incorporated during the manufacture, it is added either by placing the required quantity of hops (either loose or, what is better, confined in baskets or coarse bags,) in the worts during the boiling 30 and evaporating processes, and allowing the same to remain in the worts till they commence thickening, or by incorporating the hops or other bitter principle with the viscid mass when the evaporation is completed, and previously to the moulding and cooling, by which mode the virtue & aroma of the hops are effectually preserved, the grain- 35 stone completely keeping them from deterioration so long as it

hops



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preserves its own virtue. The grainstone may thus, when desirable, be made the medium of preserving hops, not only for grainstone brewing, but for the use of brewers and others in their ordinary brewings, to which they may thus invariably impart the virtue and  
5 aroma of new hops.

Yeast may also be preserved in the grainstone, as may also diastase or any other matter capable of producing fermentation, by mixing it with the grainstone after the evaporation is completed, and the mass is cooling and ready to mould or pack, by which means the production of  
10 beer is ensured even in localities or under circumstances where yeast cannot be procured.

Stout or porter grainstone is obtained by using the usual quantity of roasted malt or other starchy matter in the same proportion as used by brewers generally for making the worts.

15 Ale zeilithoid or grainstone is obtained in the manner first herein-before detailed, adding a greater or less quantity of hops to the grainstone (either during its manufacture or afterwards, as above set forth,) according to the description of ale required.

Small or light beers are obtained by using more water to the ale  
20 zeilithoid than in making ale, according to the strength required.

The zeilithoid, particularly the ale zeilithoid, may also be used with very great advantage in the production of yeast for bread, or for any other purpose, in warm climates, on shipboard, or elsewhere where yeast cannot be preserved or is not readily obtainable. For this purpose  
25 it is only necessary to make a strong solution of the ale zeilithoid or grainstone in the proportion of one part of the grainstone to 3 parts of water, standing the vessel in a temperature of about seventy-five degrees Fahrenheit, though the temperature may be higher or lower, when it will spontaneously ferment, and produce yeast of an  
30 excellent quality.

In regard to the quantity of beer to be brewed at one time from the grainstone, it gives the facility of brewing any quantity, from one gallon and upwards, though the larger the quantity the better the beer.

In regard to the water to be used in brewing with this material, it  
35 gives the peculiar advantage, in cases of necessity, of using spring or hard water, once distilled sea water, or even stagnant water, or any

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other water not otherwise absolutely injurious, with little or no perceptible difference from the best soft water; thus, under certain circumstances, producing a wholesome beverage from water otherwise undrinkable.

The most prominent advantages of this Invention may shortly be enumerated as follows:—

1<sup>st</sup>. The facility afforded by it of brewing good beer in all climates and under every temperature, & from one gallon upwards.

2<sup>nd</sup>. The property of spontaneous fermentation, & of producing yeast in high temperatures. 10

3<sup>rd</sup>. The indistructible nature of the substance, which retains its qualities unimpaired either by time or climate.

4<sup>th</sup>. The extreme simplicity of the process by which it is converted into beer or other beverages, requiring no fire or brewing utensils, thus enabling the very poorest classes to brew a cheap and good beer. 15

5<sup>th</sup>. The facility of using cold water with equal advantages where warm water cannot easily be procured, or where the saving of firing is an object.

6<sup>th</sup>. The rendering sea water drinkable after being once distilled, & rendering other kinds of water servicable for brewing which hitherto could not be used with advantage. 20

7<sup>th</sup>. Its condensed form (producing from four to ten times its weight of beer), and the consequent saving of freight and stowage.

8<sup>thly</sup>. Its great importance as the medium of preserving hops in all their virtue, strength, and freshness in seasons when they are good and abundant; and, 25

9<sup>th</sup>. As the medium of preparing beer in a concentrated and indistructable form when barley or other grain is plentiful, and thus providing against seasons of scarcity.

HERMAN D. MERTENS. (L.S.) 30

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